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ABSTRACT

This study investigated the effects of three classroom questioning strategies on the reading comprehension of learners of English as a Foreign Language (EFL). Subjects were 86 first-year EFL students in the school of education of Suez Canal University (Egypt), randomly assigned to three treatment groups. The same instructor taught the three groups using the same 20 reading passages, but used three different questioning strategies: student-generated questions; teacher-provided questions; and questions formulated reciprocally by teacher and student. Analysis of pre- and posttest performance revealed significant differences among the treatment groups' mean scores. Students in the reciprocal questioning group scored significantly higher than the teacher-questioning group, which in turn scored significantly higher than the student-generated-question group. Implications and suggestions for instruction and for further research are outlined. Contains 47 references. (MSE)

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Effects of three questioning strategies on EFL reading comprehension*

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Abstract

The purpose of this study was to investigate the effects of student-generated, teacher-provided, and student-teacher reciprocal questions on the reading comprehension of EFL students. The total sample of the study was 86 1st year EFL students enrolled in three departments (Arabic, French, and Basic Education) at the Faculty of Education, Suez Canal University, Suez Branch, Egypt. The subjects were randomly assigned to the three conditions in the study by section. The three groups were then instructed by the researcher using the same instructional materials, but different questioning strategies.

Statistical analysis of the data obtained via pre- and post-tests revealed significant differences among the mean scores of the three groups of the study. These differences showed that students in the reciprocal questioning group scored significantly higher than the teacher questioning group, which in turn scored significantly higher than the question generation group ($t=9.66$, $p< 0.05$; $t=8.02$, $p< 0.05$, respectively). Based upon these results, conclusions were drawn and recommendations for future research were suggested.

Statement of the problem

In the literature a considerable body of research exists regarding the positive effects of questioning on reading comprehension. In many studies, subjects in the question group scored higher than the no-question group on tests of recall and/or reading comprehension of prose materials. As Owens (1976: 7) points out, "The use of questions has been shown to be

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an effective way to increase the learning and retention of written prose in a large number of studies." Therefore, the main issue of this study was not whether questions should be asked but how they should be used. More specifically, the present study was designed to examine the effects of student-generated, teacher-provided, and student-teacher reciprocal questions on the reading comprehension of EFL students.

Theoretical background to the study

Influenced by the behaviouristic theory, some educators and reading specialists (e. g. Aschner 1961, Cushenberry 1969) suggest using teacher-generated questions as stimuli to reading comprehension. Conversely, the metacognitive theory, which places comprehension within a framework of active processing, advocates the use of self-questioning to improve reading comprehension (e. g., Duckworth 1973, Bruner 1971). Theoretically, it would seem that both teacher-provided and student-generated questions have their strengths and weaknesses. Due to the teacher's experience, his questions are supposed to be more accurate, more thought-provoking and more coherent than those of the student. In addition, teacher-posed questions may help the teacher to diagnose the students' strengths and weaknesses so that he can adjust his teaching accordingly. However, students' initiative may be stifled when the teacher becomes the only generator of questions in the classroom. Similarly, the self-questioning strategy encourages independence in the learner and enables him to control his own learning (Anderson 1970, Faw and Waller 1976, Rayan 1981,Va Jura 1983). However, students may not profit from the questions they generate because these questions may be mainly literal questions rather than higher order ones. Alternatively, the use of student-teacher reciprocal questions has been advocated by many educators and reading specialists (e. g., Helfeldt and Henk 1990, Herrmann 1988, Martin and Blanc 1981). From a theoretical standpoint, it would seem that this strategy capitalizes upon the strengths of both strategies and thereby shares the weaknesses of neither. In reciprocal questioning, students have the opportunities not only to observe the teacher's questioning behavior, but

also to imitate it under the teacher's direction. In doing so, according to Singer(1978: 904), "transfer is more likely to occur as we teach for it". He (Singer) goes on to say that:

> ... teacher-posed questions, which only direct student thinking, are inadequate for development of comprehension in students. To complete the instructional procedure, the teacher must go through a subsequent lesson, or unit chapter in which students are stimulated to formulate their own questions before, during, or after reading.

Shirley Schiever(1991:95) agrees with Singer when she says:

> Modeling is an important teaching technique; behaviors we model are assumed by our students. Asking questions that require them to think, that have a clear purpose and that visibly get results is an effective way to develop student questioning skills. The consistent use of such questions in academic, social, formal and informal interactions with students is essential.

Research hypotheses

The following hypotheses were tested at $p < 0.05$ level of significance:

1. There would be no significant differences in the mean scores among the three groups of the study on the pretest.
2. The reciprocal questioning group would score significantly higher than both the teacher-questioning and the question-generation groups on the posttest.
3. There would be no significant difference in the mean scores between the teacher-questioning group and the question-generation group on the posttest.

Significance of the study

It is hoped that the present study will be of value to EFL teachers as well as course designers since questioning has been and continues to be one of the most common ways to teach reading comprehension. The following excerpts indicate this point of view:

> As an 'art' and as a 'science' questioning will be a major concern of reading educators in the 1990s because of its relationship to comprehension.... The primary issue in questioning for comprehension purposes in the 1990s will not be whether questions should be asked but when, where, and how questions are to be used...(Pallante and Lindsey 1991: 30-31).

> Questions have been a mainstay of reading comprehension instruction for decades. They appear on most standardized and informal comprehension tests. Workbooks are filled with them, and teachers' manuals provide numerous prereading and postreading questions to use in discussing the selections that students read. (Pearson and Johnson 1974:154).

> There is no doubt about the persuasiveness of questions in classroom settings, particularly regarding textual materials. Questions often follow stories in basal readers and are used in basal workbooks and content-area texts to improve prose comprehension or to assess what students have learned from text. In fact, the primary means for determining students' reading comprehension ability is through the use of question-answering tasks following short paragraphs on standardized tests....Thus, questions can be thought of as an inducement to comprehension as well as being a means of assessing comprehension. (Raphael and Gavelek 1984: 234).

Review of empirical literature

Research on the effect of questions on comprehension and/or recall of prose materials is broad. Several studies obtained positive results with teacher-constructed questions. Rothkopf and Bisbicos (1967), for example, had subjects read a 36 page passage, with experimenter questions either before or after segments of three pages. They concluded that "The administration of experimental questions after exposure to the relevant text segment produced higher retention test performance than the NOEQ (No Experimental

Question) condition." (p. 59). Numerous other studies confirmed that teacher-constructed questions had positive effects on the comprehension and/or recall of textual materials (e. g., Boker1974, Felker and Dapra 1975,Guszak 1986, Rothkopf and Billington 1974, Watts and Anderson 1974).

The value of having students generate their own questions was also asserted by many researchers. For example, in two experiments, Frase and Schwartz (1975) investigated the effect of self-questioning on prose learning as measured by a reading achievement test. In experiment one, each student was required to ask his partner about one-third of the text, and in turn answer his partner's questions on one-third of the text and study the third section without using the questioning technique. In experiment two, students were asked to generate either five or ten questions on one-half of the text and study the second half without questions. Significant differences favoring generating questions over the read-only control group were found in both experiments. These findings were also confirmed by other investigators such as Andre and Anderson 1978-79, Cohen 1983, Hafner 1991, Schmelzer 1975.

Some other researchers reported that student-teacher reciprocal questioning is an effective strategy for improving reading comprehension. Manzo(1969), for example, tested the value of ReQuest (Reciprocal Questioning) as a method of teaching reading comprehension compared with the DRA (Directed Reading Activity). In the ReQuest condition, the teacher and the student engaged in reciprocal questioning episodes over the textual material. Results of data analysis indicated that "ReQuest was significantly (0.01) more effective than the DRA for improving the reading comprehension of remedial readers in one-to-one remediation. The DRA, however, was significantly (0.05) more effective for improving reading vocabulary in one-to-one remediation. Data also showed that the ReQuest procedure was considerably more effective than the DRA for activating and improving student questioning behavior during reading comprehension lessons." (p.71). Empirical evidence consistent with Manzo's results were found in the studies of Croll 1990,

Dao 1993, Feldman 1986, Gilroy and Moore 1988, Helfeldt and Lalik 1976, Lijeron 1993, Lysynchuk 1990.

In sum, the considerable body of research reviewed concerning questioning and reading comprehension has shown that the three strategies (student-generated, teacher-provided, and student-teacher reciprocal questions) have been continually valued by researchers as useful instructional strategies for teaching reading comprehension. However, no direct comparison among the three strategies has been made.

Methodology

Subjects

The subjects participating in the study were 1st year EFL students enrolled in three departments (Arabic, French, and Basic Education) at the Faculty of Education, Suez Canal University, Suez Branch, Egypt. The subjects were randomly assigned to the three conditions by section. The researcher eliminated from the data analysis any student who missed two or more sessions of instruction. Of the total sample originally targeted for the study, 86 students ultimately completed both treatment and testing phases (32 in the question-generation group, 30 in the teacher-questioning group and 24 in the reciprocal questioning group. All subjects participated in the study using one hour a week from their regular English curriculum and were unaware that they were participating in an experiment throughout the duration of the study.

Materials

Twenty reading passages constituted the instructional materials for the experiment. These passages were selected from Alan Cilchrist, *Modern English Readings* (London: Longman Group Ltd., 1972). All these passages were expository, averaged 500 words in length and represented a wide range of topics including history, geography, and commerce. The passages were used without any accompanying exercises to make them appropriate for each of the three treatments conditions.

Research variables

The **independent** variables for the study consisted of three experimental conditions: 1) teacher-questioning, 2) student-questioning, and 3) reciprocal questioning. In the teacher-questioning condition, the teacher had the students read the passage. Following this, each student was required to answer the teacher's questions about the passage. In the self-questioning condition, students were instructed to read and then generate questions about the most important ideas in the passage. Following this, they were required to formulate answers to their own questions. The reciprocal questioning condition involved the students and the teacher silently reading the passage and alternatively asking and answering questions related to the material.

The **dependent** variable for this study was EFL students' reading comprehension.

Tools

For the purpose of this study, the TOEFL reading comprehension subtest1(part B) was used as a pretest and subtest 2 (part B) was used as a posttest.

Procedure

At the beginning of the experiment, all subjects were pretested. Following pretesting, they were randomly assigned to the three treatment conditions by section. All groups were then instructed by the researcher in 20 one-hour sessions for a duration of five months during the 1992-93 academic year. At the end of the study, the posttest was administered to students in the three groups. Finally, the obtained data were analyzed using the one-way analysis of variance and the t-test.

Findings and discussion

Pretest results

Table 1

The one-way analysis of variance for the three treatment conditions on the pretest

Source	D. F.	SS	MS	F	Significance
Between Groups	2	1.25	o.63		
Within Groups	83	296.47	3.57	0.18	NS
Total	85	297.72			

As shown in Table 1, a one-way analysis of variance comparing the mean scores on the pretest revealed no significant differences among the three groups of the study (f=0.18, p= ns). Thus, the first hypothesis was accepted. This suggests that students in the three groups of the study were fairly equivalent in their reading comprehension at the beginning of the study. This result may be attributed to the fact that all subjects studied the same textbooks in the preparatory and secondary schools for the same amount of time (6 years). The pretest results also revealed that all subjects were poor comprehenders. This may be due to the fact that Egyptian EFL teachers, at both the preparatory and secondary school levels, merely assess reading comprehension and do not teach it.

Posttest results

Table 2

The one-way analysis of variance for the three treatment conditions on the posttest

Source	D. F.	SS	MS	F	Significance
Between Groups	2	1468.41	734.21		
Within Groups	83	442.14	5.32	137.83	P < 0.01
Total	85	1910.56			

A one-way analysis of variance was used once more to test for differences in scores on the posttest. The results (shown in Table 2) revealed statistically significant differences among the three groups of the study ($f=137.83$, $p< 0.05$). Therefore, three t-tests were employed to compare the posttest scores with the level of significance set at $p< 0.05$.

Table 3

The mean difference for each two treatment conditions

Group	N	M	S. D.	t-value
Reciprocal questioning	24	22.21	1.44	9.66
Teacher-questioning	30	17.13	2.22	
Reciprocal questioning	24	22.21	1.44	16.22
Question-generation	32	11.91	2.84	
Teacher-questioning	30	17.13	2.22	8.02
Question-generation	32	11.91	2.84	

As shown in Table 3, results from the t-tests indicated that the reciprocal questioning group scored significantly higher than the teacher-questioning and the question-generation groups ($t=9.66$, $p<0.05$, $t=16.22$, $p<0.05$, respectively). Therefore, the second hypothesis was accepted. There are several possible explanations for the beneficial effects of the reciprocal questioning strategy in this study. One explanation could be the establishment of rapport with students which might increase students' motivation and further enhanced their reading comprehension. A second possible explanation is that discussion might provide students with immediate and continuous feedback on their interpretation of the text, which in turn enhanced their reading comprehension. A third reason is that students might share their own experiences with that of the teacher, thus enhancing their own comprehension. A final

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explanation is that both the teacher and the students might benefit from this strategy (Palincsar 1982: 140). Results from the t-tests also indicated that the teacher-questioning group scored significantly higher than the question-generation group ($t=8.02$, $p<0.05$). Therefore, the third hypothesis was rejected. This result may be due to students' inexperience in posing higher order questions. Empirical evidence consistent with this finding was found in other studies, in which the student- generated questions had no effect on reading comprehension (e.g., Bernstein 1973, Hatch 1980, Morse 1976, Masuda 1993).

Conclusions

On the basis of the results of the study, it was concluded that the reciprocal questioning strategy was more effective in developing reading comprehension than the other two strategies. However, such results couldn't be taken for granted, but need to be considered in terms of the following factors which contributed to the effectiveness of the reciprocal questioning strategy in the present study: 1) Asking questions that trigger and probe thinking, 2) Distributing the questions in terms of students' abilities, 3) Presenting questions to class before calling upon someone to answer,4) Accepting correct answers sincerely and correcting wrong ones only, 5) Displaying the correct answer when the students fail to provide it, 6) Giving students the opportunity to raise their own questions,7) Handling students' questions with appropriate consideration no matter how silly they may be, and 8) Asking students to rephrase wrong questions due to poor syntax and/or incorrect logic.

Recommendations for further research

During the course of the study, the need for further studies in the following areas became apparent:

1. Exploring the effects of textually explicit versus textually implicit questions on students' reading comprehension.
2. Exploring the effects of teaching students to generate their own questions individually, in groups, and as a class on their reading comprehension.

3 Exploring the effects of student-teacher versus student-student reciprocal questions on reading comprehension.

4. Analyzing the types of questions asked by poor and good readers.

5. Replicating this study with a larger sample drawn from more than one institution at different levels.

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